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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: **BRENNAN, Thomas J.**

Serial No.: **10/005,168**

Filed: **December 4, 2001**

Title: **Transgenic Mice Containing Disruptions
in Genes Encoding A2D2 Calcium Ion
Channel Subunit Proteins**

Group Art Unit: **1632**

Examiner: **Wilson, Michael C.**

Customer No. **26619**

Docket/Order No. **R-10**

Date: **July 22, 2003**

RESPONSE TO OFFICE ACTION

Commissioner for Patents
Mail Stop Non-Fee Amendments
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

In response to the Office Action mailed May 22, 2003, in connection with the above-referenced application, the Applicant requests entry and consideration of the following amendments and remarks. The Applicant submits concurrently herewith a Petition for an Extension of Time under 37 CFR § 1.136(a) for response to the Office Action for a period of one (1) month from June 22, 2003 up to and including July 22, 2003. The Commissioner is hereby authorized to charge any deficiency or credit any overpayment to Deposit Account No. 50-1271 under Order No. R-10.

AMENDMENT TO THE SPECIFICATION

Please replace the paragraph beginning at page 9, line 1, with the following paragraphs:

--~~Figures 3-4 show~~ Figure 3 shows the location and extent of the disrupted portion of the A2D2 gene (see underlined portion of SEQ ID NO:1), as well as the nucleotide sequences flanking the *Neo^r* insert in the targeting construct (see bold portions of SEQ ID NO:1).

Figure 4 shows the sequences identified as SEQ ID NO:3 and SEQ ID NO:4, which were used as the 5'- and 3'- targeting arms (including the homologous sequences) in the A2D2 targeting construct, respectively.--

AMENDMENT TO THE DRAWINGS

Please replace original Figure 3 with new Figure 3 attached herewith.

REMARKS***III. Specification:***

The amendment to the specification is made merely to add a sequence identifier to the sequence described in Figure 3, and to more clearly describe the contents of Figure 3, and does not add or constitute new matter. Moreover, the sequence described in Figure 3 (SEQ ID NO:1) is the same sequence described in Figure 1 (the A2D2 gene described in the instant application and disclosed in SEQ ID NO:1). Support for the amendment can be found throughout the specification, claims and drawings as originally filed, and specifically can be found at page 7, lines 13-17 of the specification and in Figure 3 as originally filed.

III. Drawings/Sequence Compliance:

The Examiner has asserted that the instant application fails to comply with the requirements of 37 CFR 1.821 through 1.825, because the sequence disclosed in Figure 3 was not described in the sequence listing submitted with the application as filed. The Applicant submits that the sequence described in Figure 3 is identical to the sequence described as SEQ ID NO:1 in Figure 1 and in the original sequence listing, and thus contend that the sequence has been included in the sequence listing filed.

However, the Applicant has amended Figure 3 to include the inadvertently omitted sequence identifier. New Figure 3 with the amendment incorporated therein is attached herewith. The amendment to the Figure 3 is merely the addition of the sequence identifier at the end of the sequence disclosed therein (SEQ ID NO:1). The amendment does not add or constitute new matter, and is completely supported by the application as originally filed. Specifically, support may be found at page 8, line 29 through page 9, line 5, of the specification, and in originally filed Figures 1 and 3.

The Applicant contends, for the reasons set forth above, that a new sequence listing is not required. The sequences disclosed in SEQ ID NO:1 through SEQ ID NO:4 were included in the sequence listing as originally filed with the instant application on December 4, 2001, and no additional sequences have been disclosed in the application. As the sequence described in Figure 3, to which the Examiner refers in the instant Office Action, is included in the sequence listing originally filed (as SEQ ID NO:1), and in light of the amendment to Figure 3 to clearly identify the sequence as SEQ ID NO:1, the Applicant believes he is now in full compliance with the requirements of 37 CFR 1.821 through 1.825.

III. Requirement for Restriction:

In response to the Examiner's requirement for restriction in the instant Office Action, the Applicant elects, without traverse, Group II (claims 3-12 and 14-34), drawn to a cell having a disruption in an A2D2 calcium channel subunit gene, a non-human transgenic animal having a disruption in an A2D2 calcium channel subunit gene, a method of making the animal and a method of using the animal.

The Applicant respectfully requests entry and consideration of the foregoing amendments and remarks. Upon entry of the amendments, claims 3-12 and 14-34 are pending in the instant application.

Respectfully submitted,

Date: 7/22/03

Kelly L. Quast

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Enclosures

CERTIFICATE OF MAILING UNDER 37 CFR 1.8

I hereby certify that this correspondence and its listed enclosures is being deposited with the United States Postal Service as First Class Mail, postage paid, in an envelope addressed to: Commissioner for Patents, Alexandria, VA, Mail Stop Non- Fee Amendment/OIPE on July 22, 2003.

Name: Don Mixon

Signed: Don Mixon

Date: 7/22/03

underlined = deleted in targeting construct

BOLD = sequence flanking Neo insert in targeting construct

AACTCCTTCTACACCCGAAAGGAATCCTATGACTATCAGGCAGCCTGTGCCCTCAGCCT
CCTGGGAACCTGGGTGCTGCACCCCGGGGTGTCTTTGTGCCACCATTGCAGATTTTCCTT
AACTTGGCCTGGTGGACCTCTGCTGCCGCTGGTCCCTTATTCAGCAGCTACTCTATGGT
CTCATCTATCACAGCTGGTTCCAGGCAGACCCGGCAGAAGCTGAGGGCAGCCCCGAGACG
 CGCGAGAGCAGCTGCGTCATGAAACAGACCCAGTACTACTTCGGCTCGGTGAACGCATCC
 TATAATGCCATCATTGACTGCGGAAACTGCAGCAGGCTGTTCATGCGCAGAGACTGACC
 AACACCAATCTCCTGTTTCGTGGTGGCCGAGAAGCCGCTGTGCAGCCAGTGCAGGGCGGGC
 CGGCTGCTGCAGAAGGAGACACACTCGGACGGCCCGAGCAGTGTGAGCTGGTGCAGAGA
 CCGAGATACCGAAGAGGTCCGCACATCTGTTTTGACTACAATGCGACGGAAGATACCTCA
 GACTGTGGCCGCGGAGCCTCCTTCCCTCCGTCGCTGGGCGTCTTGTTTTCCTTGACGCTT
 TTGCTCCTCCTGGGCCTGCCACCTCGGCCGCGAGCCTCAAGTCCACTCCTTCGCTGCCTCT
 CGCCACCTCTGAGCGACCCACACACACATCATAACCCCGCCTTGGCCTCCTAGCCTTT
 CGCTCACCTCCCATTCACATTCCCAATCTAGAGCCTTGCCACTCTCTCCTGAAGGA
 CCTGGGTCCCTTCCCCCGGAGCCTGTGCCTTGGGGCAGGGGAACCCCAAAGTAAGGTGCC
 ATGGTGTGTTGGCACTCAAGATTTAGCTCACCTTGAACTGTCCAAGTGCCCGCAGTCCCT
 AGACTCATCCCCGTGGGCTAGGACAGGAGGCCACTAGTACTGATGCCAAACCAGGCCTCC
 ACCGACCCACCTGCCTGGAGATTTCTCTATGTAGGCAACCTGCCACTGCTGGGCACCT
 CTAACCTGGCCCTTTGGCCCCACCCAAAGCCCAAACCTTACCTTCTCTGGGGGAAAAAAAAG
 GAAAGATGGTAATAGTGAGAGATTGCGGGGGCACCCCCCTCCCCATTGGTTTCTGGCCCTT
 TCAGGCTACAACCCCCAGCCTTGCAAGTGTGAGAACAGTCTCACAATGACATCAGTTTA
 GACACATGCCATATACACTTGATCTCTGAGAGCAGAAACCCAACTCTCACTAGACATAC
 CTGTGATGGAACACACAAACAGACACGCACCATGGGGGGTGGCCACAAAGCCTTACACA
 AGGCGAGATGTCAATGAAGGGGTGGCCTGTGTGTTCCATCTCTGCTCACCTCAGCTCCT
 ACTCTGAGATGCAGCCTGGCTGATCCTCCCATCTCTAAAACCTGAATGTCAAACCGTGCCA
 AATGCTGGGGGGGGGGGAGACCTCTCTGTTTACCCCCCTAGCCACCAGTGTCCCCAAGTG
 CCCCTCACCTTGCCAGGTGCTCATTGTAACCATCGTTCACCAAGTGTCCGGCCCCCTAGTAG
 GACCACACATCACTGCCTGAACTCCTTTGGCAGAAGAACCCACCAGACATTGAGACATT
 GTATTTTGCCTTAGCAGGGATGAGTTGGTCTCTCCTGGCTGGGCCATCCCATCCCCAATC
 TGGTTCTTGACACTCAGGCCTAATTCCTCTGCACACACACACACACACACACACACAC
 ACACACACACACACACACAGTCCCTGCCCTTAGGAGGCCAAATTACCCCTCCCTTGCT
 GAACACACCTTGACCATGCACATGTCTAACCAACCGTACTGCACACACAGAGGCTGGA
 CCTGGGACACATCTCTTTACACCTTTCATTCTGTCAATTTCTCCCAAAGGCATCGTAACCT
 GGGGGCCAGGAGGGGACTGAGGGGCAGGGGGGAGGGGTGTAGCTGTGAGGCTCAGATGGA
 CTGGGAGGAGGGGGGAGGGTGATACATTAATTAATGGCTTCGTTAATTAATGTCATGTTG
 CTTGTTGCTTTCTCAGTGTGTGTATGGTCCATGCCAGTGCTGGTGACAGGGTGGGTATC
 CATGATGTGTGCCCAGCCTGGATGTGAGCTGTGTCTGTGGGGGCGTGTGTGTAACGTGA
 GTGTAGTCAGGTGCTCAACGGAGAATATAAAACAAAAAAGAAACAAACGTATACAGA
 AAAATAAATGTATATTTTAAGTTTAAAGACAAATGAAACCAGACAAACAATCCCCATCA
 GGTAGTTGTCCAACCCCGAGCTGGGTTCACCCCTCTCATTACCCACCTGACCTAGCTGTC
 CCCTTACTGTGGGCTGGGGGACTTGGGGGCCATTTCCTTTGCCCTTTT'TTTTGTGTTA
 TTCTATTTTGTACAGACAAGTTGGGAAAACAACAGCGACAAAAAAGTCGAGAACTTT
 GTAAATATTGTGTGTGTGATTCCCTGTAAATATTTTCAAATGGTTTATTACAGAAGAT
 CAGTTATTAAATAATGTTTCATATTTTCACTTC (SEQ ID NO:1)

FIGURE 3